Graphics Verification
June Results

Measures Used

2 x 2 Contingency Table

Observations \ Forecasts			
	A	B	C = A +B
	D	E	F = D + E
	G = A + D	H = B + E	I = C + F

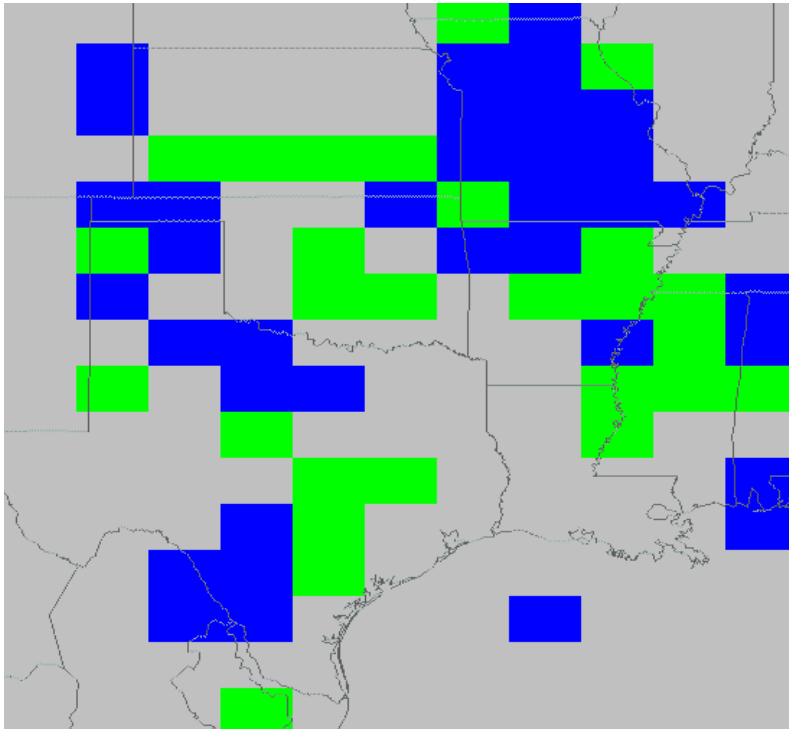
- **Chi-Square** – used to test for statistical significance. Answers the question, “Do we have a large enough sample to know our results are conclusive?”.
- **Heidke Skill Score** – used to test whether we are beating persistence or climatology.
- **Bias** – used to determine whether we are over-forecasting or under-forecasting.

HWD Results

Period: 01-30 June 03

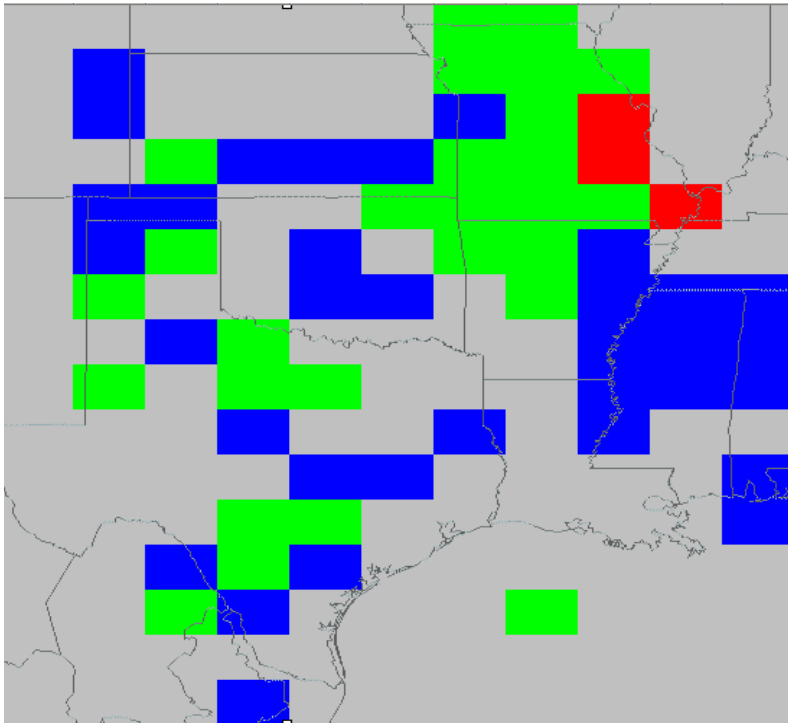
HWD 12 Hr Forecast

HEIDKE SKILL SCORE



- Strong Skill (hss>.5)
- Weak to Moderate Skill (0<hss<.5)
- No Skill (hss< 0)
- Insufficient Data

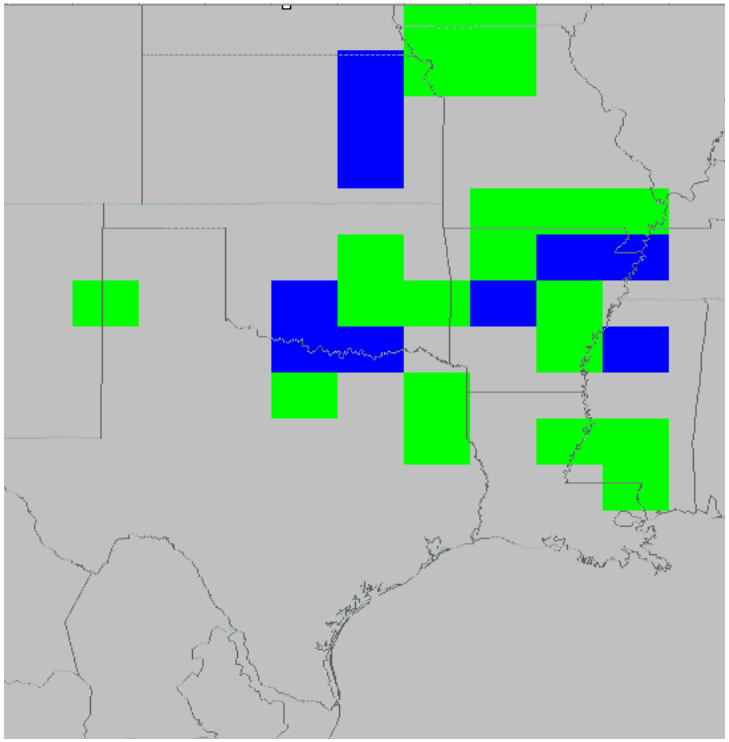
BIAS



- Over-Forecast (bias>1.2)
- No Significant Bias (.8<bias<1.2)
- Under-Forecast (bias< .8)
- Insufficient Data

HWD 24 Hr Forecast

HEIDKE SKILL SCORE



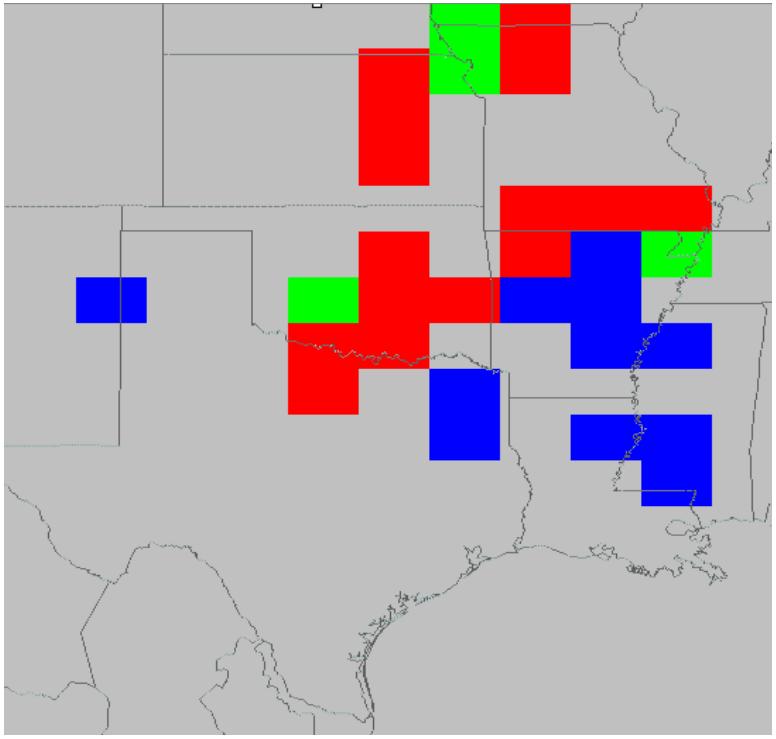
Strong Skill (hss>.5)

Weak to Moderate Skill (0<hss<.5)

No Skill (hss< 0)

Insufficient Data

BIAS



Over-Forecast (bias>1.2)

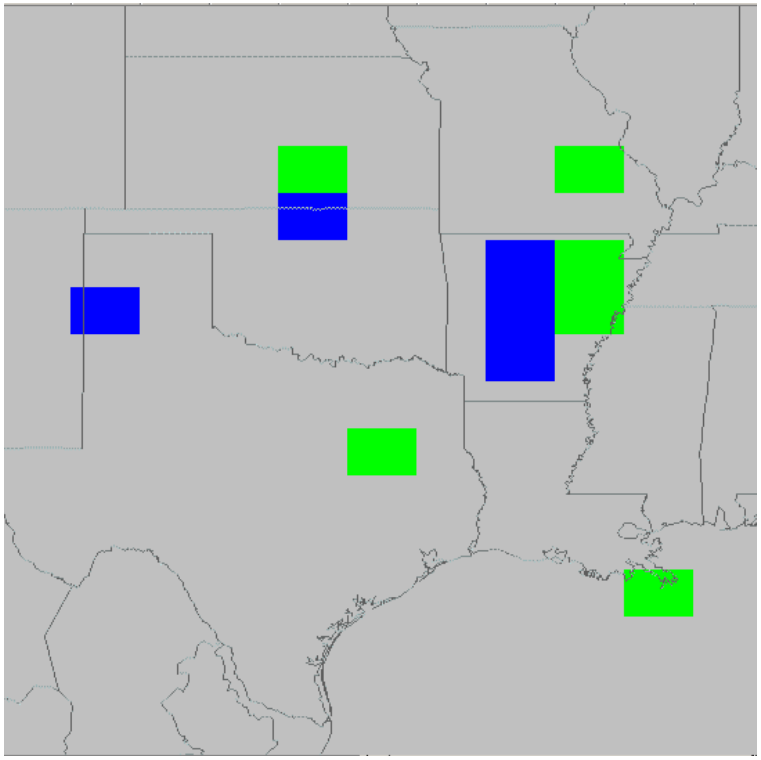
No Significant Bias (.8<bias<1.2)

Under-Forecast (bias< .8)

Insufficient Data

HWD 48 Hr Forecast

HEIDKE SKILL SCORE



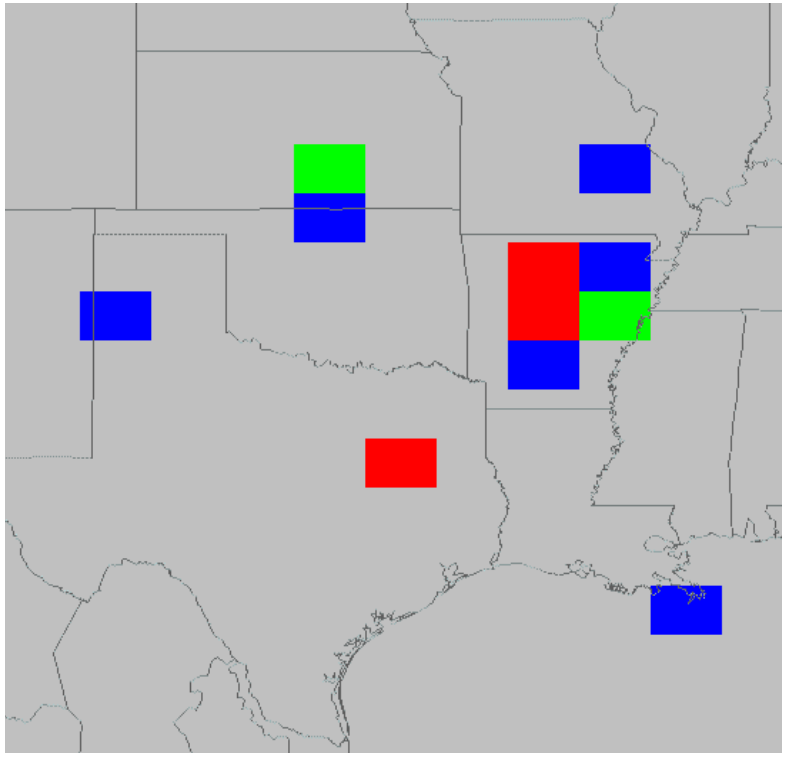
Strong Skill (hss>.5)

Weak to Moderate Skill (0<hss<.5)

No Skill (hss< 0)

Insufficient Data

BIAS



Over-Forecast (bias>1.2)

No Significant Bias (.8<bias<1.2)

Under-Forecast (bias< .8)

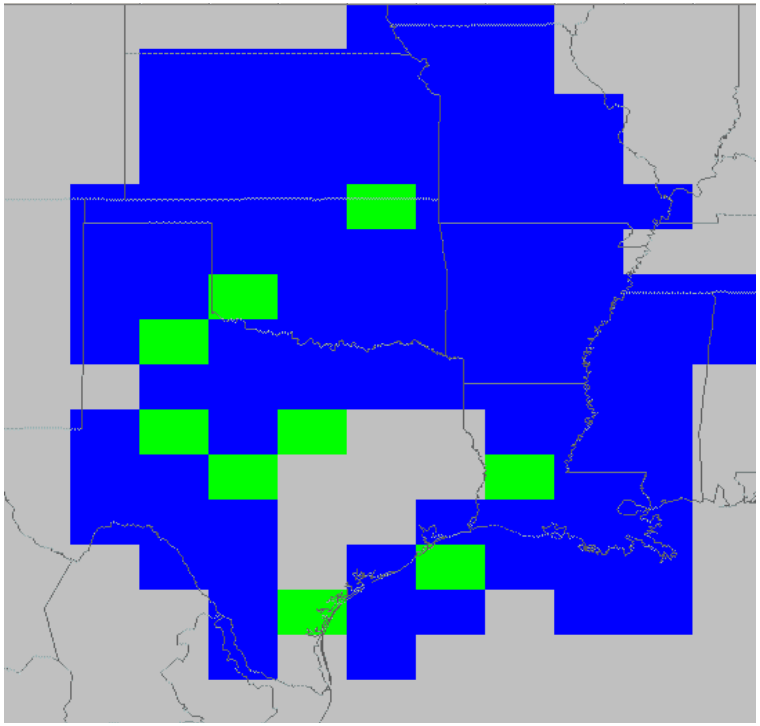
Insufficient Data

Thunderstorm Results

Period: 01-30 June 03

TSTMS 12 Hr Forecast

HEIDKE SKILL SCORE



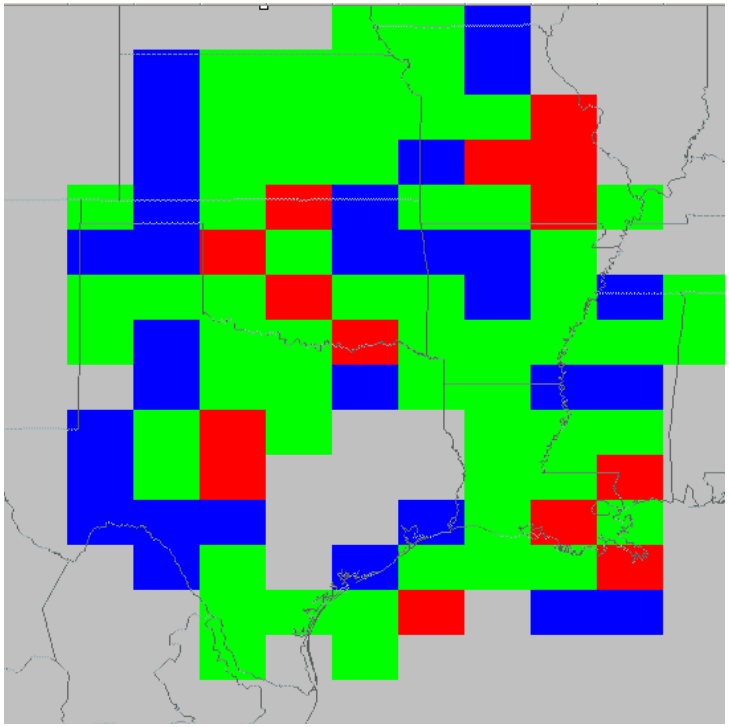
Strong Skill (hss>.5)

Weak to Moderate Skill (0<hss<.5)

No Skill (hss< 0)

Insufficient Data

BIAS



Over-Forecast (bias>1.2)

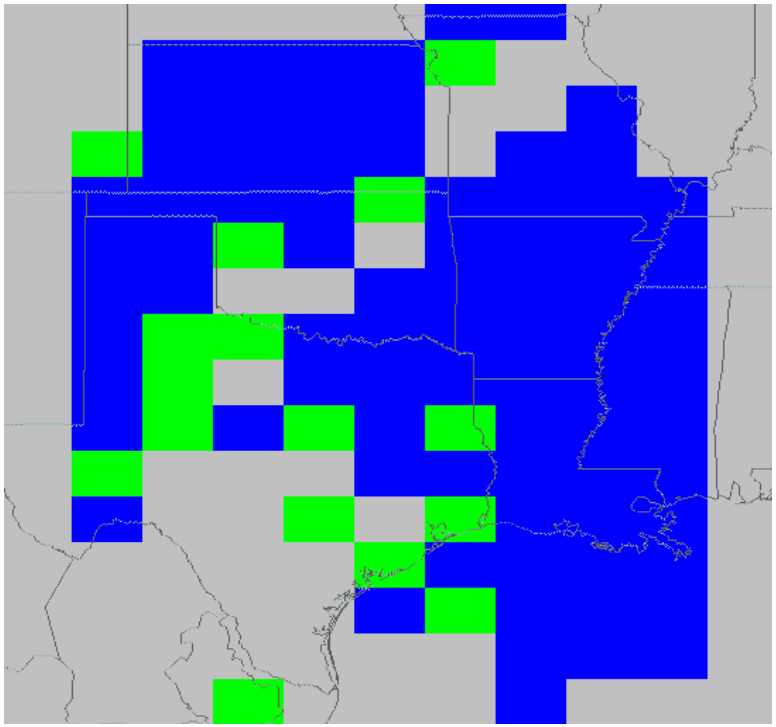
No Significant Bias (.8<bias<1.2)

Under-Forecast (bias< .8)

Insufficient Data

TSTMS 24 Hr Forecast

HEIDKE SKILL SCORE



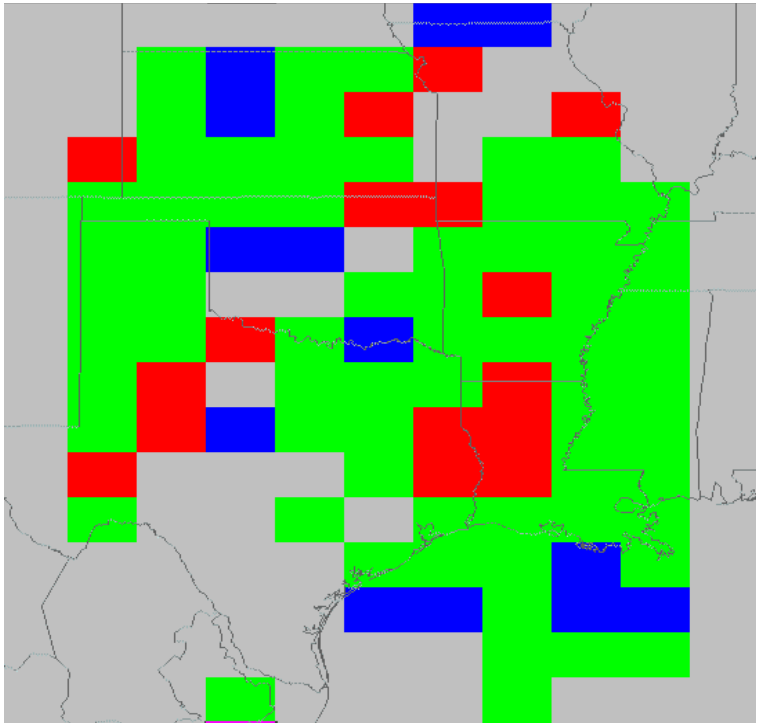
Strong Skill (hss>.5)

Weak to Moderate Skill (0<hss<.5)

No Skill (hss< 0)

Insufficient Data

BIAS



Over-Forecast (bias>1.2)

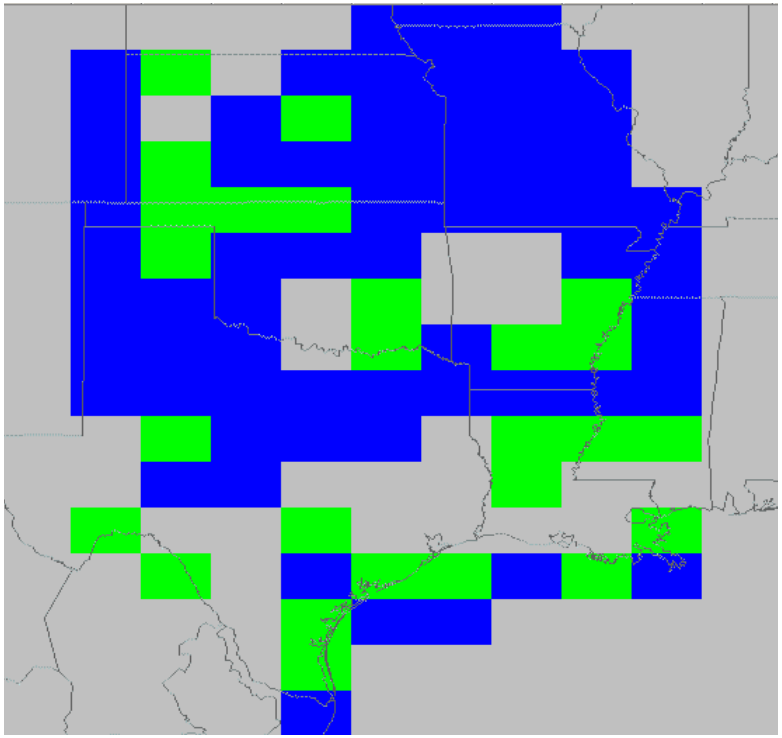
No Significant Bias (.8<bias<1.2)

Under-Forecast (bias< .8)

Insufficient Data

TSTMS 48 Hr Forecast

HEIDKE SKILL SCORE



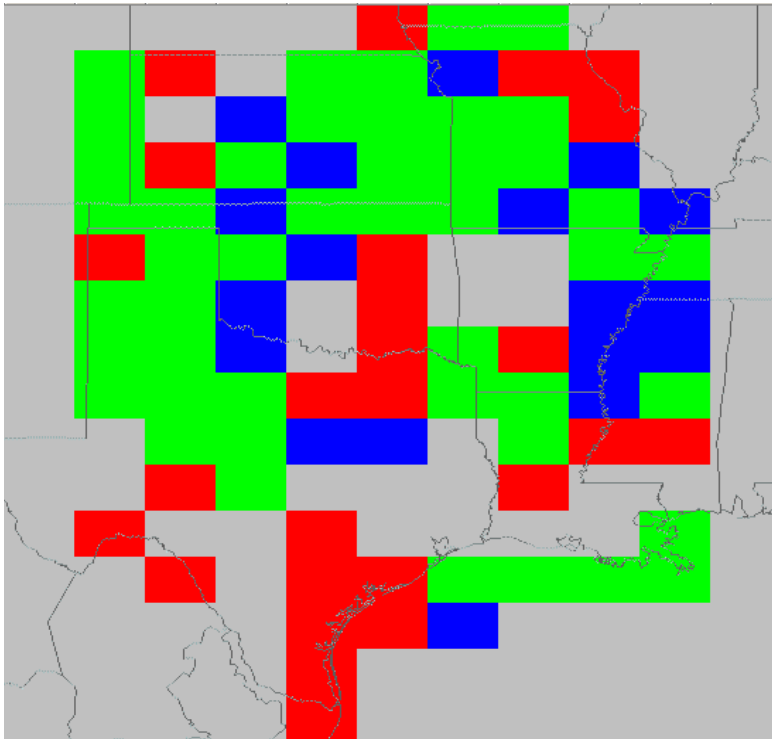
Strong Skill (hss>.5)

Weak to Moderate Skill (0<hss<.5)

No Skill (hss< 0)

Insufficient Data

BIAS



Over-Forecast (bias>1.2)

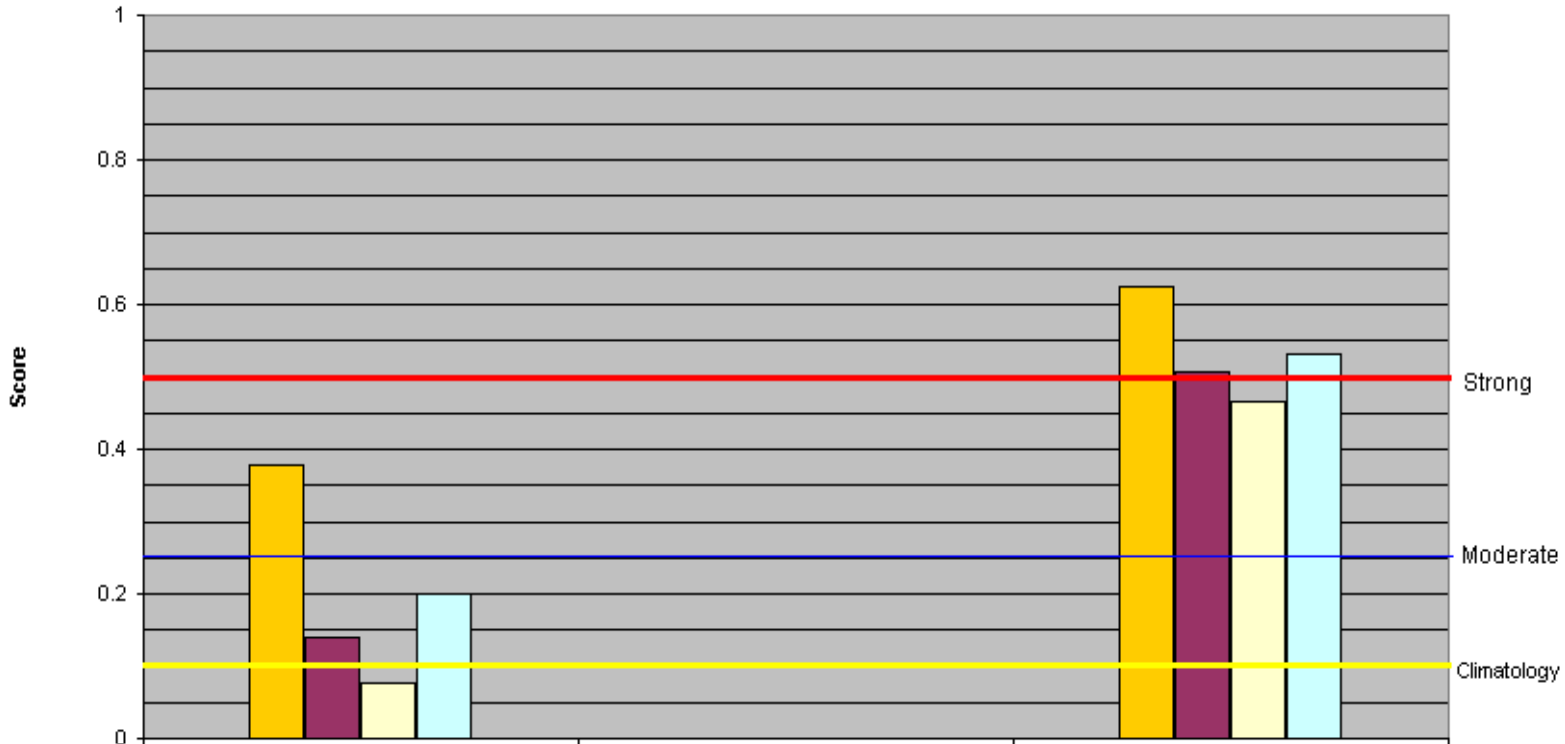
No Significant Bias (.8<bias<1.2)

Under-Forecast (bias< .8)

Insufficient Data

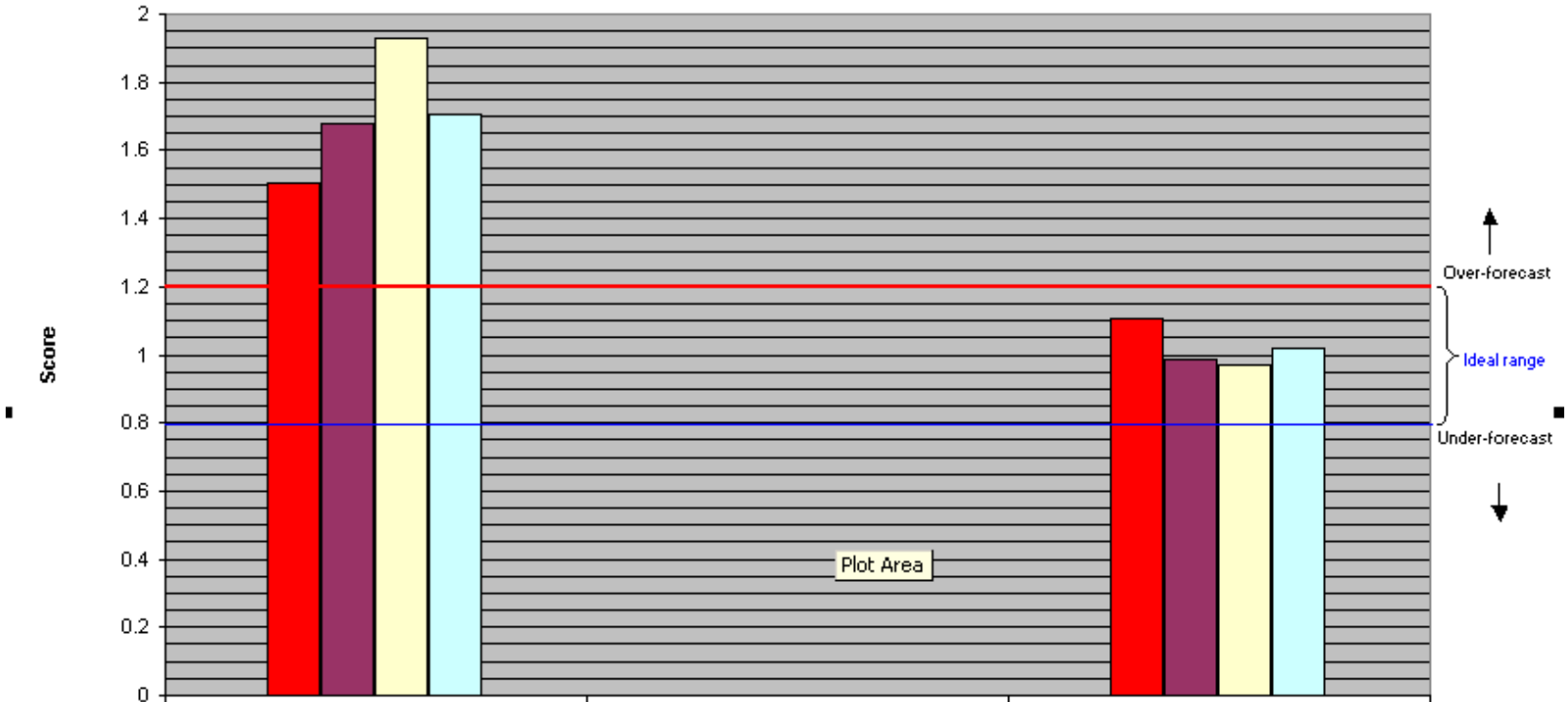
Numerical Output

HSS



	HWD		TSTMS
12 HR	0.37799118		0.625200984
24 HR	0.141061891		0.506601708
48 HR	0.077241833		0.466322073
AVG	0.198764968		0.532708255

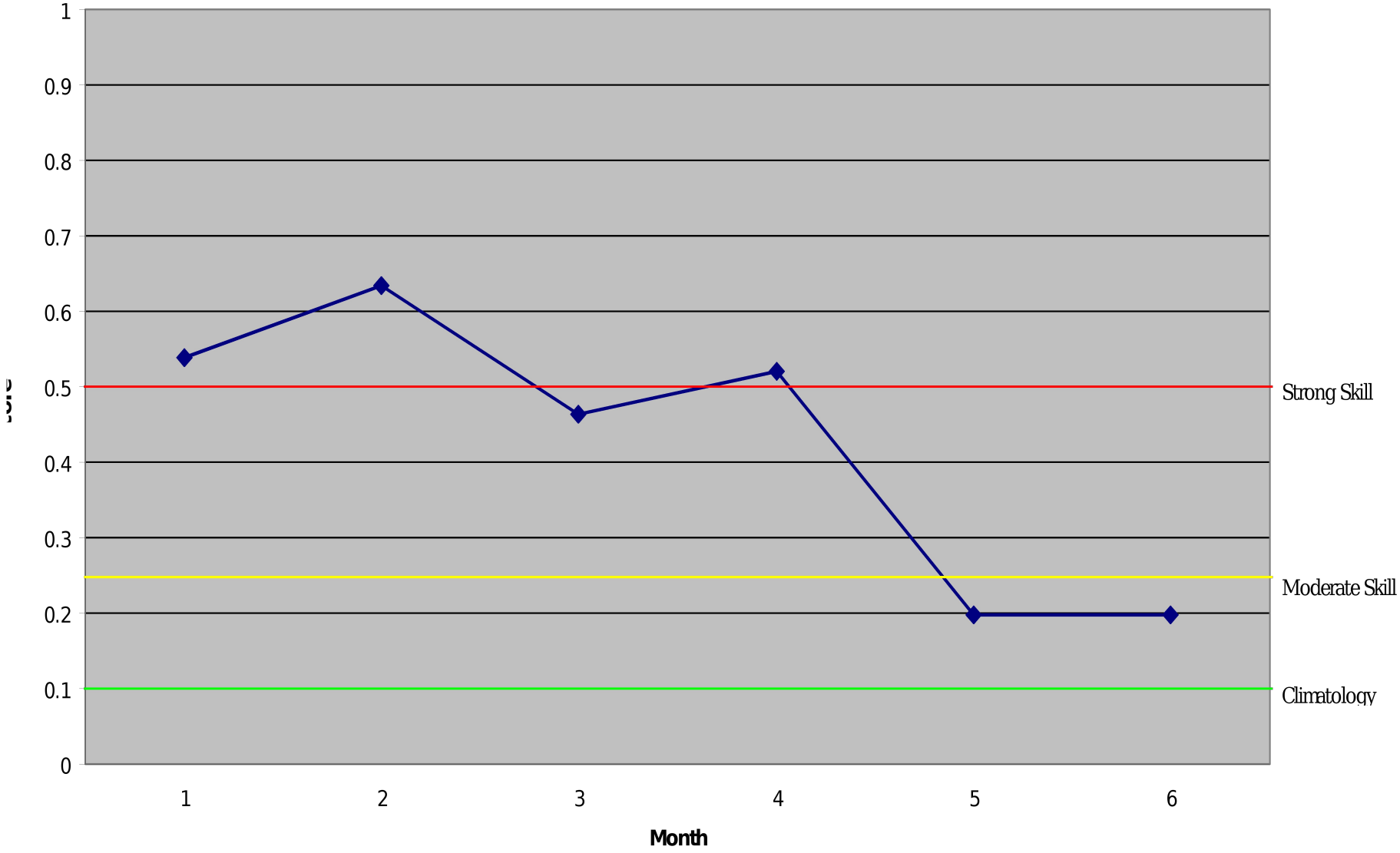
BIAS



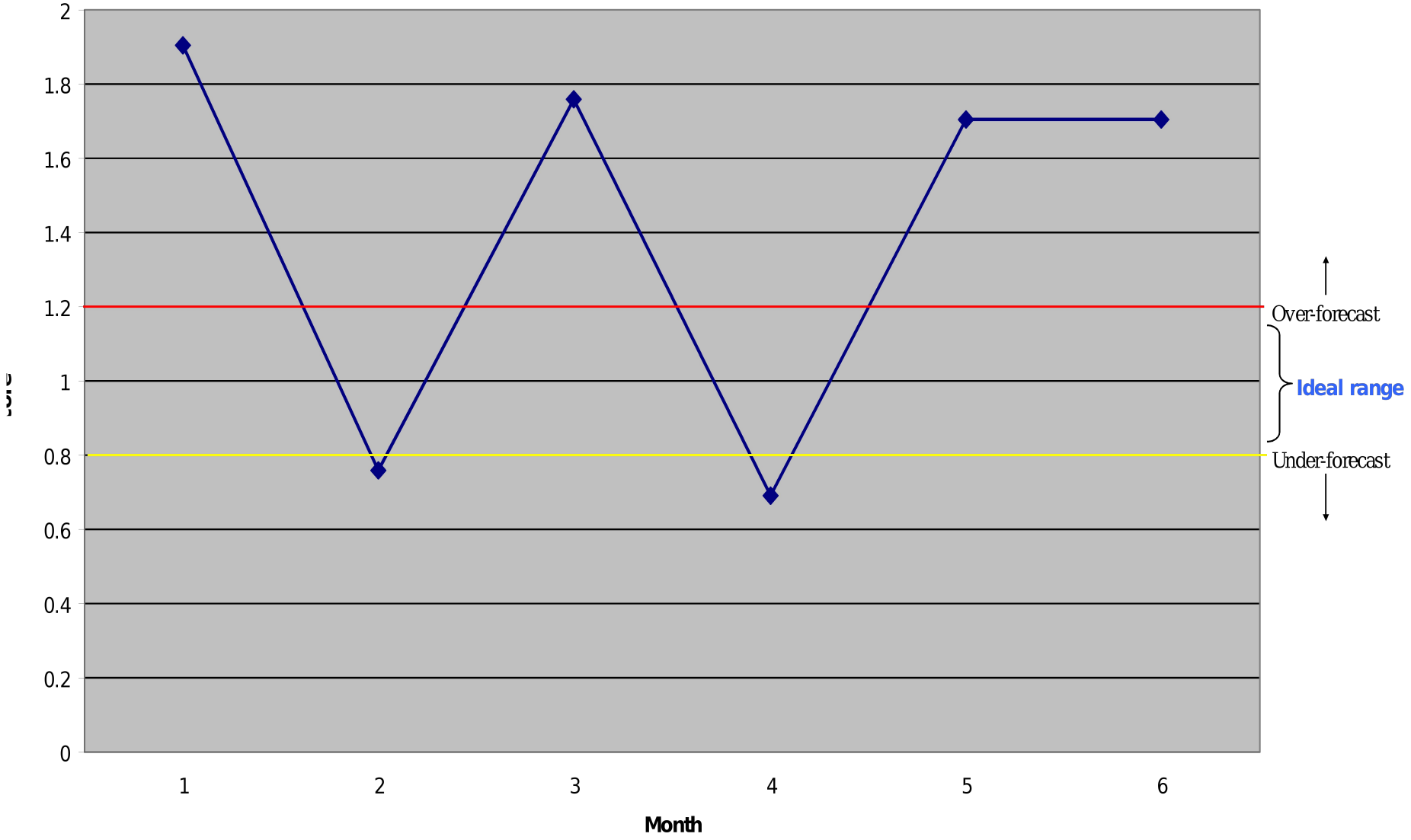
	HWD		TSTMS
12 HR	1.506308333		1.103771827
24 HR	1.677070816		0.988016573
48 HR	1.927084722		0.967591672
AVG	1.703487957		1.019793357

Graphics Trends

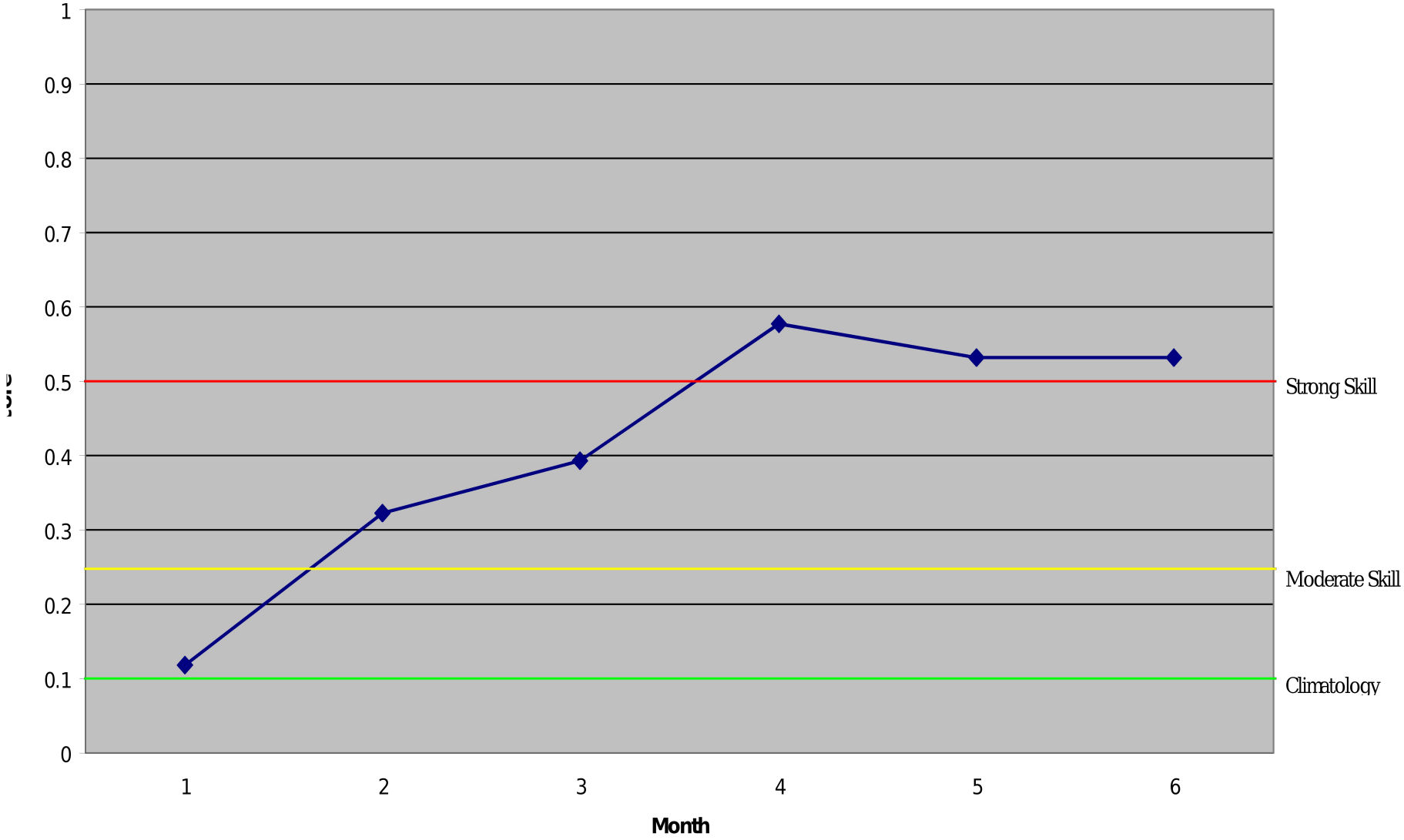
HSS HWD ALL HOURS



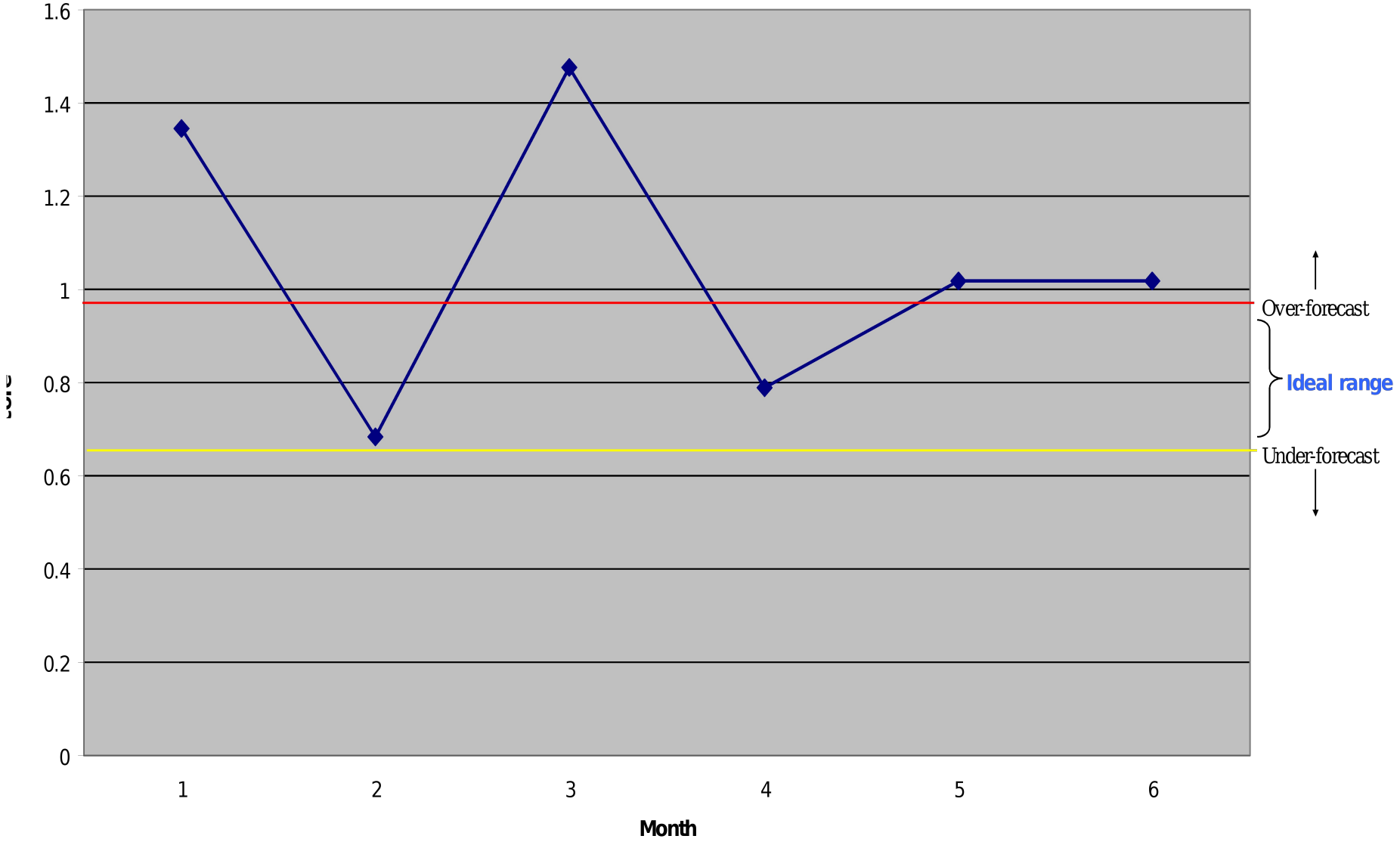
BIAS HWD ALL HOURS



HSS TSTM ALL HOURS



BIAS TSTM ALL HOURS



Review

- HWD – Not a lot of opportunities beyond 12 hour forecast period. Most activity at 24 and 48 hour associated with air mass thunderstorm activity – very hard to determine those areas where convection will reduce cig/vsby at cardinal hour.

- TSTMS – Excellent job overall, skill was slightly lower through time but overall it was strong.